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10/775,532	02/10/2004	Marko Hahn	Micronas.7262CON	6698

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EXAMINER	
CHU, RANDOLPH I	

ART UNIT	PAPER NUMBER
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/775,532	HAHN ET AL.	
	Examiner	Art Unit	
	RANDOLPH CHU	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/14/2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-12 and 14-20* is/are rejected.

7)☐ Claim(s) *2 and 13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Argument

1. Applicant's arguments filed on 11/14/2008 have been fully considered but they are not persuasive.

Applicant's argue on pages 10-12 of the response that the disclosures of Keating fails to teach or suggest that the interpolated pixel results from the use of: (1) two motion vectors; (2) each vector having two pixels for a total of four pixels; and (3) four weighting factors - one for each video information value, as in the present claimed invention.

The examiner disagrees. Keating teaches (1) two motion vectors (Fig. 11); (2) each vector having two pixels for a total of four pixels (Fig. 11, 2 pixels in Frame 1 and 2 pixels in frame 2.); and (3) two interpolation coefficients - one for each motion vector (Keating uses same interpolation coefficient for both vector and claims 1 and 12 does not limit that interpolation coefficients being same).

Applicant state, on pages 10 of the response, that the disclosures of Keating teach the selector 40 outputs a single motion vector to the interpolator 41 for each pixel of the output field to be produced. This still reads on claim when Keating uses two motion vectors (shown in Fig. 11) and select one of two motion vector (weights of unselected motion vector is zero) to interpolate to calculate output.

Therefore, the disclosure of Keating teaches mixing the video information values by multiplying the first video information value by a .first weighting factor, the second video information value by a second weighting factor, the third video information value by a third weighting factor, and the ,fourth video information value by a fourth weighting .factor and adding the weighted video information values to obtain a video information value of the pixel of the intermediate image, as recited in claims 1 and 12.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1, 3-12 and 14-19 are rejected under 35 USC 103(a) as being unpatentable over Dorricott et al. (US Patent 5,526,053) in view of Keating et al. (US Patent 5,446,497)

With respect to claim 1, Dorricott et al. teaches selecting from a first pixel (Fig 9, ref no. 500 at t = 0) the first input image (Fig 9, input filed f0) and assigning a first video information value (Fig 9, information for ref no. 500 at t = 0) to the first pixel; selecting a second pixel (Fig 9, ref no. 500 at t = 1) from the second input image (Fig 9, input filed f1) and assigning a second video information value (Fig 9, information for ref no. 500 at t = 1) to second pixel using the first motion vector (Fig 9, Va);

selecting a third pixel (Fig 9, ref no. 510 at t = 0) from the first input image (Fig 9, input filed f0) and assigning a third video information value (Fig 9, information for ref no. 510 at t = 0) to the third pixel using a second motion vector (Fig 9, Vb);
selecting a fourth pixel (Fig 9, ref no. 510 at t = 1) from the second input image (Fig 9, input filed f1) and assigning a fourth video information value (Fig 9, information for ref no. 510 at t = 1) to the fourth pixel using the second motion vector (Fig 9, Vb);
determination a first interval specified by the first video information value and the second video information value or a second interval specified by the third video information value and the fourth video information value (col. 1 line 65 – col. 2 line 2, Fig. 9).

Dorricott et al. does not explicitly teaches mixing the video information values by multiplying the first video information value by a first weighting factor, the second video information value by a second weighting factor, the third video information value by a third weighting factor, and the fourth video information value by a fourth weighting factor and adding the weighted video information values to obtain a video information value of the pixel of the intermediate image, the weighting factors being chosen such that the video information value of the pixel of the intermediate image lies within the determined first or second intervals.

Keating et al. teaches mixing of the video information values with the weighted video information (interpolation coefficient) values so obtained in order to obtain a video information value of the pixel of the intermediate image (output field), the weighting factors being chosen such that the video information value of the pixel of the

intermediate image lies within the determined first or second intervals (The output pixel is obtained by combining the values of the pixels located in the progressive scan frame.) (col. 15 lines 36 – 66).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to mix video information with weighting factor to predict interpolated pixel in the method of Dorricott et al.

The suggestion/motivation for doing so would have been that to locate the appropriate pixels in the pair of frames are combined to produced optimized output pixel and both references are for the use and processing of motion vectors.

Therefore, it would have been obvious to combine Keating et al. with Dorricott et al. to obtain the invention as specified in claim 1.

With regard claim 3, Keating et al. teach equally weighting the first video information value and the second video information value (col. 15 lines 36 – 66).

With regard claim 4, Keating et al. teach equally weighting the third video information value and the fourth video information value (col. 15 lines 36 – 66).

With respect to claim 5, if the second motion vector is zero vector, it uses one motion vector to interpolate intermediate image as taught by AARP (applicant admitted prior art, De Han et al.).

With regard claim 6, Dorricott et al. and Keating et al. teach generating first a first intermediate value (Dorricott et al., Fig 9, Va) is generated by mixing the first video information value and generating the second video information value and a second intermediate value (Dorricott et al., Fig 9, Vb) is generated by mixing the third video information value and the fourth video information value, and weighting the first and second the intermediate values using a weighting factor (Keating et al., interpolation coefficient, col. 15 lines 36 – 66).in order to obtain the video information value of the pixel (Dorricott et al., Fig 9, ref no. 110) of the intermediate image (Dorricott et al., col. 9 lines 18-29).

With regard claim 7, Keating et al. teaches equally weighting first video information value and the second video information value during the step of generating the first intermediate value and equally weighting the third video information value and the fourth video information value during the step of generating the second intermediate value (interpolation ratio of ½:½ col. 16 lines 7-59).

With regard claim 8, Keating et al. teaches selecting one of the first intermediate value and the second intermediate value as the video information value of the pixel of the intermediate image depending on the location of first and second intermediate values relative to the determined first and second intervals (col. 15 lines 36 – 66, Fig. 11).

With regard claim 9, Keating et al. teaches selecting one of the first and intermediate value, selects one of the first and second intermediate values that is within one of the first and second determined intervals (col. 15 lines 36 – 66, Fig. 11).

With regard claim 10, Dorricott et al. teaches determining first interpolated video information value using the first determined interval; determining a second interpolated video information value using the second determined interval, and mixing the first interpolated video information value and the second interpolated video information value to generate the video information value of the pixel of the intermediate image (col. 9 lines 18-29).

With regard claim 11, Keating et al. teaches first and second interpolated video information values are equally weighted (col. 16 lines 7-59).

With respect to claim 12, please refer to rejection for claim 1.

With respect to claim 14, please refer to rejection for claim 3.

With respect to claim 15, please refer to rejection for claim 4.

With respect to claim 16, please refer to rejection for claim 6.

With respect to claim 17, please refer to rejection for claim 7.

With respect to claim 18, please refer to rejection for claim 8.

With respect to claim 19, please refer to rejection for claim 10.

With respect to claim 1, Dorricott et al. teaches selecting from a first pixel (Fig 9, ref no. 500 at t = 0) the first input image (Fig 9, input filed f0) and assigning a first video information value (Fig 9, information for ref no. 500 at t = 0) to the first pixel; selecting a second pixel (Fig 9, ref no. 500 at t = 1) from the second input image (Fig 9, input filed f1) and assigning a second video information value (Fig 9, information for ref no. 500 at t = 1) to second pixel using the first motion vector (Fig 9, Va); selecting a third pixel (Fig 9, ref no. 510 at t = 0) from the first input image (Fig 9, input filed f0) and assigning a third video information value (Fig 9, information for ref no. 510 at t = 0) to the third pixel using a second motion vector (Fig 9, Vb); selecting a fourth pixel (Fig 9, ref no. 510 at t = 1) from the second input image (Fig 9, input filed f1) and assigning a fourth video information value (Fig 9, information for ref no. 510 at t = 1) to the fourth pixel using the second motion vector (Fig 9, Vb); determination a first interval specified by the first video information value and the second video information value or a second interval specified by the third video information value and the fourth video information value (col. 1 line 65 – col. 2 line 2, Fig. 9).

Dorricott et al. does not explicitly teaches mixing the video information values by multiplying the first video information value by a first weighting factor, the second video information value by a second weighting factor, the third video information value by a third weighting factor, and the fourth video information value by a fourth weighting factor

and adding the weighted video information values to obtain a video information value of the pixel of the intermediate image, the weighting factors being chosen such that the video information value of the pixel of the intermediate image lies within the determined first or second intervals.

Keating et al. teaches mixing of the video information values with the weighted video information (interpolation coefficient) values so obtained in order to obtain a video information value of the pixel of the intermediate image (output field), the weighting factors being chosen such that the video information value of the pixel of the intermediate image lies within the determined first or second intervals (The output pixel is obtained by combining the values of the pixels located in the progressive scan frame.) and a sum of the first, the second, the third and the forth weight factors is equal to approximately 1 (when two of the weights are zero and two of the weights are 8/10 and 2/10) (col. 15 lines 36 – 66).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to mix video information with weighting factor to predict interpolated pixel in the method of Dorricott et al.

The suggestion/motivation for doing so would have been that to locate the appropriate pixels in the pair of frames are combined to produced optimized output pixel and both references are for the use and processing of motion vectors.

Therefore, it would have been obvious to combine Keating et al. with Dorricott et al. to obtain the invention as specified in claim 20.

Allowable Subject Matter

Claims 2 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randolph Chu whose telephone number is 571-270-

1145. The examiner can normally be reached on Monday to Thursday from 7:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RIC/

/Matthew C Bella/

Supervisory Patent Examiner, Art Unit 2624